



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D2741

Job Sheet 171547-A



Part No: D2741

Job Qty: 2 ea

Part Name: Replacement Blade



Part Weight: 0 lbs

Status: Scheduled

Priority: High

Job Created: 3/23/18

Job Tracking No:

Created By: Linda Lacelle

Due Date: 2/19/18

Type: Stock

Description:

Note: DWG REV E IPP Rev: D 00.11.15 Removed P/O turning - in house process EC IPP Rev: E 06-03-20 As Per Rev C JLM IPP Rev: F

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
180	QC	2 pcs		2/17/18	0.00	0.00	QC5		
190	HandFinish	2 pcs		2/17/18	0.00	0.12	HandFinish4		
200	Powdercoat	2 pcs		2/19/18	0.00	0.05	Powdercoat2	gloss black	SA 18-3-23 MAR 25 2018
210	QC	2 pcs		2/19/18	0.00	0.00	QC3		11 MAR 26 2018
220	Packaging	2 pcs		2/19/18	0.00	0.00	Packaging3-1	St 538	MAR 26 2018
230	QC21-SA	2 Ea		2/19/18	0.00	0.00	QC21		

Part Op 190 - clean with wash & wipe to remove oil
Descriptions: 200 - START TIME:

Primer 138747 Paint 138823

P0039181

DAS
21
9-89

MAR 7 7 2018

Job BOM

Job BOM records could not be found.

Job Allocations

Job Allocations could not be found.

Part Specifications

Spec No	Description	Target/Tolerance	Limits	Type	Special Comments
1	Blade	1.500Inches ± 0.010	1.510 1.490		
2	Blade	0.715Inches ± 0.010	0.725 0.705		
3	Blade	0.516Inches + 0.008 - 0.001	0.524 0.515	Diameter	
4	Blade	2.000Inches ± 0.030	2.030 1.970		
5	Blade	13.750Inches ± 0.010	13.760 13.740		
6	Blade	1.060Inches + 0.012 - 0.001	1.072 1.059	Diameter	
7	Blade	0.150Inches ± 0.010	0.160 0.140		



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D2741
Job Sheet 171547



Part No: D2741

Job Qty: 40 ea

Part Name: Replacement Blade



Part Weight: 0 lbs

Status: Scheduled

Priority: High

Job Created: 2/2/18

Job Tracking No:

Due Date: 2/19/18

Created By: Linda Lacelle

Type: Stock

Description:

Note: DWG REV E IPP Rev: D 00.11.15 Removed P/O turning - in house process EC IPP Rev: E 06-03-20 As Per
Rev C JLM IPP Rev: F

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	40 Ea		2/15/18	0.00	0.00	Start Up Machining-1		SL 18/08/09
100	Bandsaw	40 pcs		2/16/18	0.00	3.11	Bandsaw1		SL 18/02/09
110	CNC Vertical Machining	40 pcs		2/17/18	0.00	27.45	HAAS1-2		S.S. 18/03/14
130	QC	40 pcs		2/17/18	0.00	0.00	QC8 Machining-1		SL 18/02/15
140	Small Fab	40 pcs		2/17/18	0.04	0.68	Small Fab-2		SL
150	QC	40 pcs		2/17/18	0.00	0.00	QC5		38
160	Outsource	40 pcs		2/17/18	0.00	0.00	Outsource1	3981	MAR 16 2018
170	Packaging	40 pcs		2/17/18	0.00	0.00	Packaging2		SL 18/03/24
180	QC	40 pcs		2/17/18	0.00	0.00	QC5		38
190	HandFinish	40 pcs		2/17/18	0.00	2.47	HandFinish4		3-RC
200	Powdercoat	40 pcs		2/19/18	0.00	1.02	Powdercoat2		
210	QC	40 pcs		2/19/18	0.00	0.00	QC3		
220	Packaging	40 pcs		2/19/18	0.00	0.00	Packaging3-1		
230	QC21-SA	40 Ea		2/19/18	0.00	0.00	QC21		

Part Op 100 - Cut blanks 13.850" long +0.063" -0.000"
Descriptions: 110 - 1-Machine per folio FA108
140 - 1-Debur
160 - Issue P/O: _____
170 - Ensure Test report or Certification attached
190 - clean with wash & wipe to remove oil
200 - START TIME: _____

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
M4130NB0.500X03.000	4130 Bar 0.500 X 3.00	46.1640 ft (1.1541 ea)	90-Start up Operation	

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	M4130NB0.500X03.000	46	106	0

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Part Specifications					
Spec No	Description	Target/Tolerance	Limits	Type	Special Comments
1	Blade	1.500Inches ± 0.010	1.510 1.490	1.500	
2	Blade	0.715Inches ± 0.010	0.725 0.705	0.716	
3	Blade	0.516Inches $+ 0.008$ $- 0.001$	0.524 0.515	Diameter 0.516	
4	Blade	2.000Inches ± 0.030	2.030 1.970	2.020	
5	Blade	13.750Inches ± 0.010	13.760 13.740	13.755	
6	Blade	1.060Inches $+ 0.012$ $- 0.001$	1.072 1.059	Diameter 1.06	
7	Blade	0.150Inches ± 0.010	0.160 0.140	0.145	
8	Blade	2.930Inches ± 0.030	2.960 2.900	2.930	
9	Blade	0.375Inches ± 0.010	0.385 0.365	0.375	
10	Blade	0.250Inches ± 0.030	0.280 0.220	0.25	
11	Blade	0.250Inches ± 0.030	0.280 0.220	0.25	

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DQA: mlp 18 June 2019 Date: _____

QA Closed: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only



Work Order: <u>171547</u>		DISPOSITION		AGAINST DEPARTMENT/PROCESS					
Part No. <u>D2241</u>		Rework Scrap Use-as-is		Cross tube Small Fab Finishing Composite		Water Jet Prod. Eng. Coord. Rec/Store/Packaging Supplier		Engineering Quality Other	
NCR No. <u>19-7150</u>		Suspected Unapproved ☒		Thermoforming Large Fab					
Date: _____		Step #: <u>160 ??</u>		QTY Effective: _____				MRB (QS1042) Approval	
Description Work Order Deviation		Disposition							
2 pieces are under specified tolerance on thickness								Completed By <u>S.C.</u> <u>18/02/14</u>	
R.C part left during machining								Lead hand / Supervisor <u>OK 18/02/15</u>	
								QC / QA Coordinator Approval <u>PD 18-02-15</u>	
FAULT CATEGORY									
Root Cause									
Environment		No Re-verification		Pressure/Forced		Temperature/Cure		Power Loss/Surge	
Design		Operator		Bending		Set-up		Folio/Program	
Doc/Data		Offset/Setup		Centre Not Concentric		BOM/Route		Grain	
Equip/Tooling		Supplier		Cracks		Broken/Damage/Defect		Weld	
Handling/Pre		Training		Crimp/Kink/Ripple/Wave		Inspection Incomplete/Unqualified		Wrong Stock Pulled	
Material		Use for Testing		Cuffs		Contamination		Out of Sequence	
Internal Transport		Poor Information		Crushing		Countersink		Off-set	
Tribal Knowledge		Rushing		Heat Treat		Cut Too Short		Mislabeled	
LOA		Product Improvement		Wave/Twist in Tube		Instructions Incomplete/Unclear		Fit/Function	
Substation		Process Improvement		Marks/Chatter		Drill Holes		Misaligned/off center	
Past Expiry Date		Manufacturing Process							
Misidentified		Past Due							
OTHER: _____									



Dart Aerospace Ltd.
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Tel (613) 632-5200

PURCHASE ORDER

PO039181

Supplier: MEI001-VC
Metcor Inc.
560 Boul. Arthur Sauve
Saint-Eustache
QC
J7R 5A8 Canada
Phone: 450 473 1884
Fax: 450 491 5498

PO No: PO039181

PO Date: 3/2/18

Due Date: 3/20/18

**Purchase Order
Revision:**

Revision Date:

Ship-To Contact: Lacelle, Linda Phone:
llacelle@dartaero.com

REVISED

\$

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground

Pymt Terms: Net 30

Freight Terms:

Special Comments:

Items										
Line Item	Job	Part	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	171547	D2741	Replacement Blade Issue P/O: _____ HARDEN MATERIAL: ULTIMATE TENSILE STRENGTH = 152 KSI MINIMUM YIELD TENSILE STENGHT = 141 KSI (34-40 HRC) SAND BLAST PART AFTER HEAT TREAT \	Firmed	3/27/18	38 pcs	0 pcs	38 pcs	\$18.395263/pcs	\$699.02
			NOTE: DO NOT OIL AFTER SANDBLAST NOTE: DETAIL C OF C REQUIRED							
Line Item Note part made from 4130 bar										
10	171726	RB T102137- 107-107	Sleeve 1--Issue P/O to Metcore ; P/O _____ RC 32-37 2-Bead blast 3- Certificate of Conformity is required	Firmed	3/20/18	6 pcs	0 pcs	6 pcs	\$50.00/pcs	\$300.00
Line Item Note part made from 4140N round bar 0.875"										
11	171725	RB T102137- 107-105	Strap 1--Issue P/O to Metcore ; P/O _____ RC 46-50 2-Bead blast 3- Certificate of Conformity is required	Firmed	3/20/18	6 pcs	0 pcs	6 pcs	\$50.00/pcs	\$300.00
Line Item Note part made from 4140N round bar 0.625"										
									Grand Total: \$1,299.02	

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METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
325892	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
PO039181	N/A	4130		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

SEL HARDEN

HARDEN AND TEMPER

SAE AMS 2759/1 REV.E

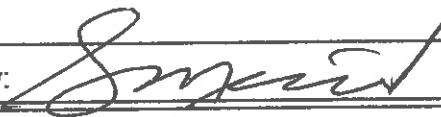
EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	34 - 40 HRC	38	38 - 40 HRC
TENSILE (KSI)	152 - 182 KSI		171 - 182 KSI

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
38	133	D2741 BLADE (38) D2741 JOB 171547 1 BOITE DE BOIS

16/3/18

COMMENTAIRES / comments

APPROUVÉ par / Approved by:



DATE: 2018-03-14

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détail

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
325892	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
PO039181	N/A	4130		
<u>SPÉCIFICATIONS DU PROCÉDÉ</u> processing specifications				
SEL HARDEN HARDEN AND TEMPER SAE AMS 2759/1 REV.E				
EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results	
HARDNESS	34 - 40 HRC	38	38 - 40 HRC	
TENSILE	152 - 182 KSI	1	165.4 - 165.4 KSI	
METCOR REPORT # 4518 ; VO				
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description		
38	133	D2741 BLADE (38) D2741 JOB 171547 1 BOITE DE BOIS		

COMMENTAIRES / comments

SALT HARDEN 1575F, 40 MIN
SNAP TEMPER 400F, 2 HRS
TEMPER 875F, 4 HRS

Le traitement thermique (TT) a été fait en utilisant des équipements en conformité avec AMS2759 et AMS 2750.
Le TT a été fait tel que requis par AMS2759 et toutes les vérifications et les tests demandés ont été faites et documentés.
Aucun changement n'a été faite par rapport au TT. On certifie que le matériel a été fabriqué, échantillonné, testé et inspecté en accord avec AMS2759 et le bon de commande et le matériel rencontre les exigences spécifiées.

Ce document et les documents qui lui sont joints peuvent contenir des informations confidentielles, être soumis aux réglementations relatives au contrôle des exportations ou ayant un caractère privé. S'ils ne vous sont pas destinés, nous vous signalons qu'il est strictement interdit de les divulguer, de les reproduire ou d'en utiliser de quelque manière que ce soit le contenu. Toute exportation ou réexportation non autorisée est interdite.

Heat treatment (HT) was performed with equipment that meets the requirements of AMS2759 & AMS2750.
All HT operations were in compliance with AMS2759 and all verifications have been performed and documented. No unauthorized changes were performed in regards to the HT. We certify that the material was manufactured, sampled, tested and inspected in accordance with AMS2759 and the purchase order and was found to meet the requirements.

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METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
325892	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

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APPROUVÉ par / Approved by:

Vincent Conatth



DATE: 2018-03-20



Metcor

Mar 20, 2018

ASTM E8 / 0.2% OFFSET YIELD / 1" GL.(4d)

Report No. 4518

Test Date 20-Mar-18 Testing Machine STM-100KN 0211506

Client DART AEROSPACE
Operator Viorel Oltean
Material 4130

PO po039181
W.O. 325892

Part # D2741

Load Cell S/N (TVI110012), Units (LBS)

22480

Crosshead Speed (Inches / min) or Rate 0.5

Displacement Sensor

EZ.1-1 (5286)

Notes Results are in compliance with customer and specification requirements.

Test No	Specimen ID	Diameter (in)	Yield (kpsi)	Tensile (kpsi)	Total Elong (%)	RA (%)
10339	325892-1	0.250	154.8	165.4	15.6	58.5
	Mean	0.250	154.8	165.4	15.6	58.5
	Std Dev					
	Specification (min)			152.0		
	(max)			182.0		

By  

Date: Mar 20, 2018

Test Performed in Accordance with ASTM E 8, Rev. 16a

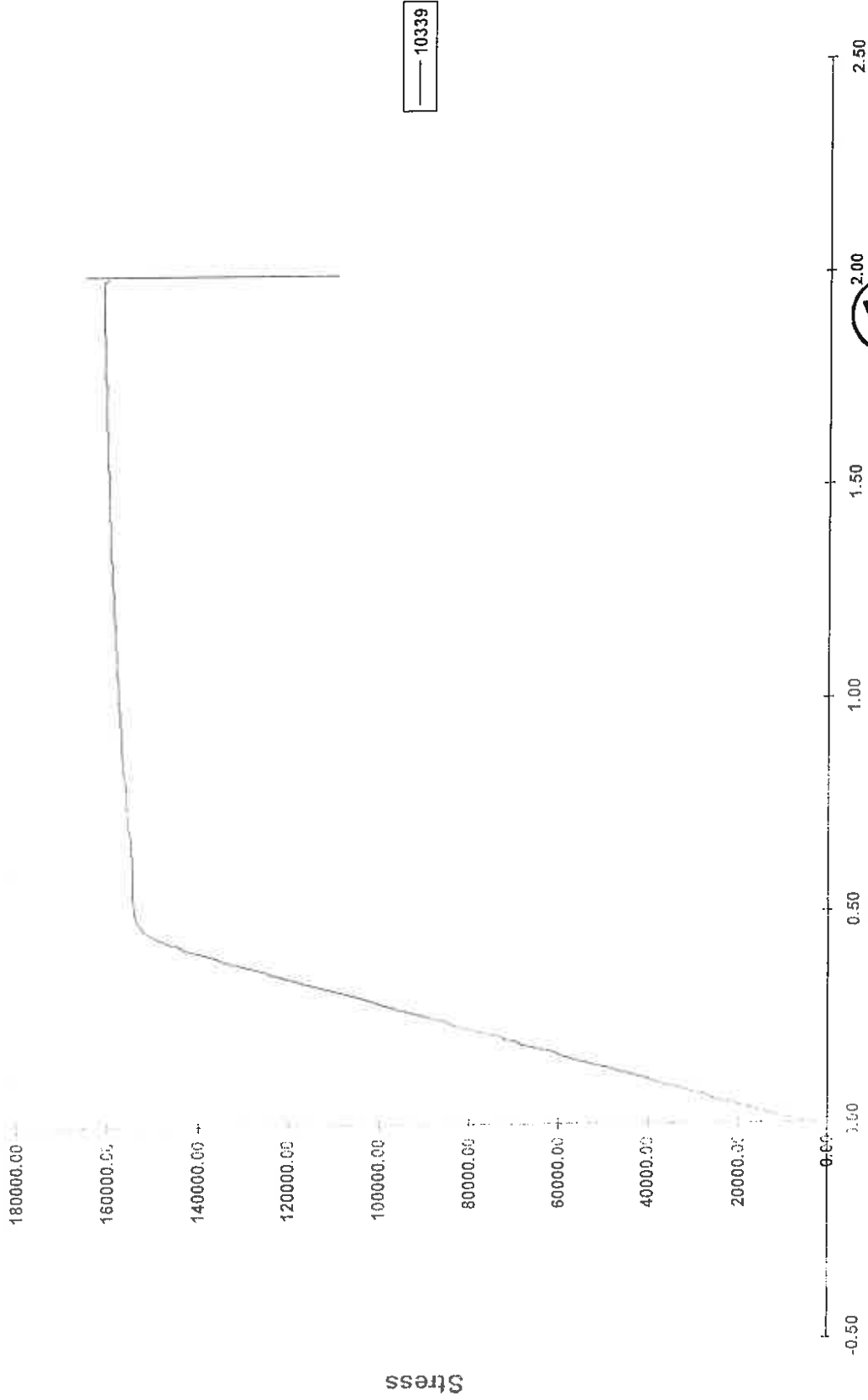
Metcor 560 Boul Arthur-Sauve St-Eustache, Quebec J7R 5A8

TEL 450-473-1884 FAX 450-491-5498



Report No 4518 ASTM E8 / 0.2% OFFSET YIELD / 1" GL (4d)

Stress (Lbs / Inches²) vs Extension (%)



MET
10

By *[Signature]*

Testing M/V: 10339 STM-100KN 0

Temperature °C

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél: 450-473-1824

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450-491-6434

Certificat de Conformité Certificate of Compliance

BON DE TRAVAIL order	CHANGEMENT bill
325892//	

CLIENT / customer 213

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

QW K8A 1K1

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

QW K8A 1K1

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classif / den	MATÉRIEL material	MAÎTRE D'ŒUVRE prime contractor	PROCESSUS
PO038181	N/A	4130		

SPÉCIFICATIONS DU PROCÉDE

processing specifications

SEL HARDEN

HARDEN AND TEMPER

SAE AMS 2759/1 REV E

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	34 - 40 HRC	38	38 - 40 HRC
TENSILE (KSI)	152 - 182 KSI		171 - 182 KSI

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
38	133	D2741 BLADE (38) D2741 JOB 171547 1 BOITE DE BOIS

COMMENTAIRES / comments

APPROUVÉ par / Approved by.



DATE: 2013-03-14